

Attorney Docket No. 030393

IN THE DRAWINGS

Please replace the drawing sheet containing Figures 1A-1C, the drawing sheet containing Figures 2 and 3, the drawing sheet containing Figures 4A and 4B, the drawing sheet containing Figures 5 and 6, the drawing sheet containing Figures 11A-11C, and the drawing sheet containing Figures 11D and 11E with the attached replacement sheets.

Changes are made to apply the appropriate shading to cross-sectional views of the dielectric layers and the metal layers as requested by the Examiner. No new matter is added.

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REMARKS

Claims 1-57 are presented for examination. Claims 1, 10, 18, 21, 30, 38 and 40 are currently amended. Claim 22 is canceled without prejudice or disclaimer of subject matter. No new claims have been added.

In the Office Action the drawings were objected to as not properly cross-hatching the sectional views.

Claims 1-6, 8, 9, 21-23, 26-35, 37-42, 44-49, and 51-57 were rejected under 35 USC § 102(b) as being anticipated by Takubo (U.S. 6,329,610). Claims 10-12 and 14-18 were rejected under 35 USC § 102(b) as being anticipated by Burgess (U.S. 2001/0020548 A1).

Claims 7, 43 and 50 were rejected under 35 USC § 103(a) as being unpatentable over Takubo in view of Zohni (U.S. 2002/0117761 A1). Claims 13, 19 and 20 were rejected under 35 USC § 103(a) as being unpatentable over Burgess in view of Zohni. Claim 36 was rejected under 35 USC § 103(a) as being unpatentable over Takubo.

Drawings

The Examiner objected to the drawings as not properly cross-hatching the sectional views. Applicants have submitted herewith replacement drawing sheets, showing the dielectric material as being electrical insulation and the metal areas labeled with the proper metal cross-hatching. The electrical insulation cross-hatching should not be taken to limit the scope of the present invention. In other words, any conventional dielectric material may be used without departing from the spirit and scope of the present invention.

Reconsideration and withdrawal of the objection to the drawings is respectfully requested.

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Takubo

Claims 1, 21, 30 and 38 are currently amended, support for which can be found in the drawings and specification as filed, for example, at paragraph [0055]; and in Figures 3 and 4.

Applicants note that Takubo discloses a first via land of a wiring layer on a first surface of a first insulation layer that is a rigid layer and a second via land of a wiring layer on a second surface of a second insulation layer that is a flexible layer being electrically and mechanically connected with a *conductive pillar pierced through a third insulation layer* disposed between the first insulation layer and the second insulation layer. (Abstract)

The Examiner states that Takubo discloses, *inter alia*, a first blind via (107b), referring to Figure 17 of Takubo. (Office Action, Page 3) Applicants respectfully submit that 107b is not a blind via, but rather a conductive pillar piercing through a third insulation layer 103. (Abstract; col. 27, lines 64-67)

Applicants have amended claims 1, 18 and 30 to clarify that the interstitial bridge pads “physically contacts” the first dielectric layer and the second dielectric layer.

Furthermore, Applicants have amended claim 21 to require that the plurality of interstitial bridge pads connect to the first metal layer by a first blind via, and that each of the plurality of interstitial bridge pads connect to the second metal layer by a second blind via.

Claim 30 has been amended to require that the pair of opposed coaxial blind vias are “transversing” a first dielectric layer and a second dielectric layer.

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Finally, claim 38 has been amended to require that each of the plurality of interstitial bridge pads are "transversing" the first and second dielectric layers.

In other words, and unlike Takubo, as defined in the amended claims, the bridge pads physically contact both the first and second dielectric layers having blind vias formed therein.

For example, in FIG. 3 of the present application, bridge pads 134 are physically contacting dielectric layers 125 and 124, with each dielectric layer 125, 124 having a blind via 142, 140 formed therethrough (in other words, the blind vias 142, 140 transverse dielectric layers 125, 124), connecting the bridge pad 134 with capture pads 132, 130.

Independent claims 29, 33, 51, 55, and 56 contain claim language, as originally filed, that supports the above discussion. Independent claim 40, as amended, also contains claim language that supports the above discussion. More specifically, each of these independent claims require a first dielectric layer "disposed on" the first metal layer, a bridge layer "disposed on" the first dielectric layer and a second dielectric layer "disposed on" the bridge layer. Therefore, the first dielectric layer is in physical contact with the first metal layer, which is in physical contact with the bridge layer, which is in physical contact with the second dielectric layer.

Takubo fails to teach or fairly suggest the structure as described in the amended claims. More specifically, Takubo fails to either teach or fairly suggest a structure having a bridge pad that "physically contacts" two dielectric layers wherein each of the dielectric layers has a blind via "transversing" therethrough, as in amended claims 1, 21, 30 and 38.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-6, 8, 9, 21-23, 26-35, 37-42, 44-49, and 51-57 as being anticipated by Takubo.

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Burgess

Claims 10 and 18 are currently amended, support for which can be found in the specification as filed, for example, at paragraph [0055].

Burgess discloses methods for laser drilling blind vias at multiple depths in multilayer panels. The blind vias of Burgess are provided in a multilayer substrate to interconnect conductive layers at different locations along the substrate. (col. 12, lines 30-34, referring to Figure 26) The layers 2, 3, 4, and 5 are not bridge pads, but are rather electrically connecting layers, connecting one layer at one location of the substrate to another layer at another location of the substrate.

Burgess fails to teach or fairly suggest the inventive structure as currently claimed. Claims 10 and 18, as amended, require that at least one "bridge pad lacks electrical connectivity" to any other bridge pads. In other words, a bridge pad may connect two capture pads, at opposite sides of the bridge pad, through first and second blind vias formed in first and second dielectric layers sandwiching the bridge pad.

Moreover, Burgess may not be modified such that the layers 2, 3, 4, and 5 do not interconnect other blind vias, as such a modification would render the device not suitable for its intended purpose of daisy-chaining blind vias in multiple layers.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 10-12 and 14-18 as being anticipated by Burgess.

Zohni

Dependent claims 7, 43, and 50 stand rejected under 35 USC 103(a) as being unpatentable over Takubo in view of Zohni.

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Zohni discloses an off-center solder ball attachment assembly. As discussed above, Takubo neither teaches nor fairly suggests the inventive structure as claimed in independent claims 1 and 40. Zohni is relied upon by the Examiner as a secondary reference for its alleged teaching of bridge pads and vias having certain diameters. While not acquiescing to the merits of the interpretation of Zohni by the Examiner, Applicants respectfully submit that Zohni, taken alone or combined with the teachings of Takubo, fails to overcome the deficiencies of the primary reference (Takubo) as discussed above and neither teaches nor fairly suggests the inventive structure as claimed in independent claims 1 and 40.

Furthermore, claims 7, 43, and 50, being dependent and further limiting claims 1 and 40 (which, as discussed above, should be allowable over the prior art of record), should be allowable for that reason as well as for the additional recitations each contains.

For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 7, 43, and 50 as being unpatentable over Takubo in view of Zohni.

Dependent Claims 13, 19, and 20 stand rejected under 35 USC 103(a) as being unpatentable over Burgess in view of Zohni. As discussed above, Burgess neither teaches nor fairly suggests the inventive structure as claimed in dependent claims 10 and 18. Zohni fails to provide any teaching to overcome the deficiencies of Burgess discussed above.

Furthermore, claims 13, 19, and 20, being dependent and further limiting claims 10 and 18 (which, as discussed above, should be allowable over the prior art of record), should be allowable for that reason as well as for the additional recitations each contains.

For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 13, 19, and 20 as being unpatentable over Burgess in view of Zohni.

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Dependent claim 36 stands rejected under 35 USC 103(a) as being unpatentable over Takubo. Claim 36, being dependent and further limiting claim 33 (which, as discussed above, should be allowable over the prior art of record), should be allowable for that reason as well as for the additional recitations it contains.

For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 36 as being unpatentable over Takubo.

Conclusion

In light of the arguments and amendments presented herein, the Applicants respectfully submit that all pending claims are in condition for allowance. Accordingly, reconsideration and allowance of this Application is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: May 17, 2006

By: _____

Howard Seo
Reg. No. 43,106
Attorney for Applicants

QUALCOMM Incorporated
Attn: Patent Department
5775 Morehouse Drive
San Diego, California 92121
Telephone: (858) 651-5797
Facsimile: (858) 658-2502

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Dependent claim 36 stands rejected under 35 USC 103(a) as being unpatentable over Takubo. Claim 36, being dependent and further limiting claim 33 (which, as discussed above, should be allowable over the prior art of record), should be allowable for that reason as well as for the additional recitations it contains.

For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 36 as being unpatentable over Takubo.

Conclusion

In light of the arguments and amendments presented herein, the Applicants respectfully submit that all pending claims are in condition for allowance. Accordingly, reconsideration and allowance of this Application is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

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By: 

Howard Seo
Reg. No. 43,106
Attorney for Applicants

QUALCOMM Incorporated
Attn: Patent Department
5775 Morehouse Drive
San Diego, California 92121
Telephone: (858) 845-5235
Facsimile: (858) 658-2502